

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in this application.

1. (Cancelled)

2. (Previously Presented) A method for measuring at least one of an erosion and dishing on a semiconductor wafer, comprising the steps of:

transmitting a first light signal toward the semiconductor wafer;

receiving a reflected light signal that has reflected off said semiconductor wafer, said reflected light signal comprising a first mixed reflected polarized component having a first phase and a second mixed reflected polarized component having a different phase;

separating from said reflected light signal said first mixed reflected polarized light signal component having a first phase and said second mixed reflected polarized light signal component having a different phase, wherein said first mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal, and wherein said second mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal;

detecting a first intensity of said first mixed reflected polarized light signal component;

detecting a second intensity of said second mixed reflected polarized light signal component;

determining a difference in phase between said first and second mixed reflected polarized light signal components based upon said first and second intensities; and

measuring at least one of erosion and dishing based upon said difference in phase.

3. (Previously Presented) The method of claim 2, wherein the step of determining a difference includes:

determining a difference between said first and second intensities to reduce the effect on at least one measured value of a texture on said semiconductor wafer.

4. (Previously Presented) A system for measuring at least one of an erosion and dishing on a semiconductor wafer, comprising:

a light source for transmitting a first light signal toward said semiconductor wafer;

a light beam splitter for separating from a reflected light signal that has reflected off of said semiconductor wafer;

a first mixed reflected polarized light signal component having a first phase;

a second mixed reflected polarized light signal component having a different phase, wherein said first mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal, and wherein said second mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal;

a first detector for detecting a first intensity of said first mixed reflected polarized light signal component;

a second detector for detecting a second intensity of said second mixed reflected polarized light signal component;

a phase determinator for determining a difference in phase between said first and second mixed reflected polarized light signal components based upon said first and second intensities; and

an object characteristic determinator for determining at least one of the erosion on said semiconductor wafer and the dishing on the semiconductor wafer based upon said difference in phase.

5. (Previously Presented) The system of claim 4, wherein said phase determinator determines a difference between said first and second intensities to reduce the effect on at least one measured value of a texture on said semiconductor wafer.

6. (Previously Presented) A method for measuring a Kerr effect on a first object, comprising the steps of:
transmitting a first light signal toward the first object;
receiving a reflected light signal that has reflected off said first object, said reflected light signal comprising a first mixed reflected polarized component having a first phase and a second mixed reflected polarized component having a different phase;

separating from said reflected light signal said first mixed reflected polarized light signal component having a first phase and said second mixed reflected polarized light signal component having a different phase, wherein said first mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal, and wherein said second mixed reflected polarized light signal

component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal;

detecting a first intensity of said first mixed reflected polarized light signal component;

detecting a second intensity of said second mixed reflected polarized light signal component;

determining a difference in phase between said first and second mixed reflected polarized light signal components based upon said first and second intensities; and

measuring the Kerr effect based upon said difference in phase.

7. (Previously Presented) The method of claim 6, wherein said first object is one of a magnetic disk and a silicon wafer.

8. (Previously Presented) The method of claim 6, further comprising the steps of:
determining whether a defect exists at a first location on the first object based upon said first and second intensities; and
marking said first location to identify said defect.

9. (Previously Presented) The method of claim 8, wherein said marking step further comprises the steps of:

moving a mechanical scribe to a position substantially adjacent to said first location;
positioning said mechanical scribe at substantially said first location; and
marking said first location with said mechanical scribe.

10. (Previously Presented) The method of claim 6, wherein the step of determining a difference includes:

determining a difference between said first and second intensities to reduce the effect on at least one measured value of a texture on said first object.

11. (Previously Presented) The method of claim 6, further comprising the step of:
determining a thickness of a carbon layer of said first object based upon said difference in phase.

12. (Previously Presented) The method of claim 6, further comprising the step of:
polarizing said first light signal to generate a first polarized light signal component and a second polarized light signal component of said first light signal, said first and second polarized light signal components being orthogonally polarized.

13. (Previously Presented) A method for measuring a lubricant thickness on a first object, comprising the steps of:

transmitting a first light signal toward the first object;
receiving a reflected light signal that has reflected off said first object, said reflected light signal comprising a first mixed reflected polarized component having a first phase and a second mixed reflected polarized component having a different phase;

separating from said reflected light signal said first mixed reflected polarized light signal component having a first phase and said second mixed reflected polarized light signal component having a different phase, wherein said first mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of

said reflected light signal, and wherein said second mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal;

detecting a first intensity of said first mixed reflected polarized light signal component;

detecting a second intensity of said second mixed reflected polarized light signal component;

determining a difference in phase between said first and second mixed reflected polarized light signal components based upon said first and second intensities; and

measuring the lubricant thickness based upon said difference in phase.

14. (Previously Presented) The method of claim 13, wherein said first object is one of a magnetic disk and a silicon wafer.

15. (Previously Presented) The method of claim 13, further comprising the steps of:
determining whether a defect exists at a first location on the first object based upon said first and second intensities; and
marking said first location to identify said defect.

16. (Previously Presented) The method of claim 15, wherein said marking step further comprises the steps of:

moving a mechanical scribe to a position substantially adjacent to said first location;
positioning said mechanical scribe at substantially said first location; and
marking said first location with said mechanical scribe.

17. (Previously Presented) The method of claim 13, wherein the step of determining a difference includes:

determining a difference between said first and second intensities to reduce the effect on at least one measured value of a texture on said first object.

18. (Previously Presented) The method of claim 13, further comprising the step of:
determining a thickness of a carbon layer of said first object based upon said difference in phase.

19. (Previously Presented) The method of claim 13, further comprising the step of:
polarizing said first light signal to generate a first polarized light signal component and a second polarized light signal component of said first light signal, said first and second polarized light signal components being orthogonally polarized.

20. (Previously Presented) A system for measuring a Kerr effect on a first object, comprising:
a light source for transmitting a first light signal toward a first object;
a light beam splitter for separating from a reflected light signal that has reflected off of said first object;
a first mixed reflected polarized light signal component having a first phase and
a second mixed reflected polarized light signal component having a different phase,
wherein said first mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal, and wherein

said second mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal;

a first detector for detecting a first intensity of said first mixed reflected polarized light signal component;

a second detector for detecting a second intensity of said second mixed reflected polarized light signal component;

a phase determinator for determining a difference in phase between said first and second mixed reflected polarized light signal components based upon said first and second intensities; and

an object characteristic determinator for determining the Kerr effect of said first object based upon said difference in phase.

21. (Previously Presented) The system of claim 20, wherein said light beam splitter includes:

a first splitter unit for separating said first mixed reflected polarized light signal component and a modified light signal component from said reflected light signal; and

a second splitter unit for separating said second mixed reflected polarized light signal component from said modified light signal component.

22. (Previously Presented) The system of claim 21, wherein said second mixed reflected polarized light signal component is the same as said modified light signal component.

23. (Previously Presented) The system of claim 20, wherein said first object is one of a magnetic disk and a silicon wafer.

24. (Previously Presented) The system of claim 20, further comprising:

defect determinator for determining whether a defect exists at a first location on the first object based upon said first and second intensities; and

a mechanical scribe for marking said first location to identify said defect.

25. (Previously Presented) The system of claim 24, further comprising:

a scribe positioner for moving a mechanical scribe to a position substantially adjacent to said first location before marking said first location.

26. (Previously Presented) The system of claim 20, wherein said phase determinator comprises:

a texture eliminator for determining a difference between said first and second intensities to reduce the effect on at least one measured value of a texture on said first object.

27. (Previously Presented) A system for measuring a lubricant thickness on a first object, comprising:

a light source for transmitting a first light signal toward a first object;

a light beam splitter for separating from a reflected light signal that has reflected off of said first object;

a first mixed reflected polarized light signal component having a first phase and

a second mixed reflected polarized light signal component having a different phase, wherein said first mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal, and wherein

said second mixed reflected polarized light signal component comprises both P-polarized and S-polarized light relative to the plane of incidence of said reflected light signal;

a first detector for detecting a first intensity of said first mixed reflected polarized light signal component;

a second detector for detecting a second intensity of said second mixed reflected polarized light signal component;

a phase determinator for determining a difference in phase between said first and second mixed reflected polarized light signal components based upon said first and second intensities; and

an object characteristic determinator for determining the lubricant thickness of said first object based upon said difference in phase.

28. (Previously Presented) The system of claim 27, wherein said light beam splitter includes:

a first splitter unit for separating said first mixed reflected polarized light signal component and a modified light signal component from said reflected light signal; and

a second splitter unit for separating said second mixed reflected polarized light signal component from said modified light signal component.

29. (Previously Presented) The system of claim 28, wherein said second mixed reflected polarized light signal component is the same as said modified light signal component.

30. (Previously Presented) The system of claim 27, wherein said first object is one of a magnetic disk and a silicon wafer.

31. (Previously Presented) The system of claim 27, further comprising:

defect determinator for determining whether a defect exists at a first location on the first object based upon said first and second intensities; and

a mechanical scribe for marking said first location to identify said defect.

32. (Previously Presented) The system of claim 31, further comprising:

a scribe positioner for moving a mechanical scribe to a position substantially adjacent to said first location before marking said first location.

33. (Previously Presented) The system of claim 27, wherein said phase determinator comprises:

a texture eliminator for determining a difference between said first and second intensities to reduce the effect on at least one measured value of a texture on said first object.